

(12) UK Patent Application (19) GB (11) 2 184 296 (13) A

(43) Application published 17 Jun 1987

(21) Application No 8629617

(22) Date of filing 11 Dec 1986

(30) Priority data

(31) 859464

(32) 11 Dec 1985

(33) ZA

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(51) INT CL⁴

H02K 7/075 B06B 1/16 // H02K 17/16

(52) Domestic classification (Edition I)

H2A HG WW

F2S 1215 1243 SL

U1S 1605 F2S H2A

(56) Documents cited

GB 1320071

GB 0959303

GB 1196864

GB 0936191

(58) Field of search

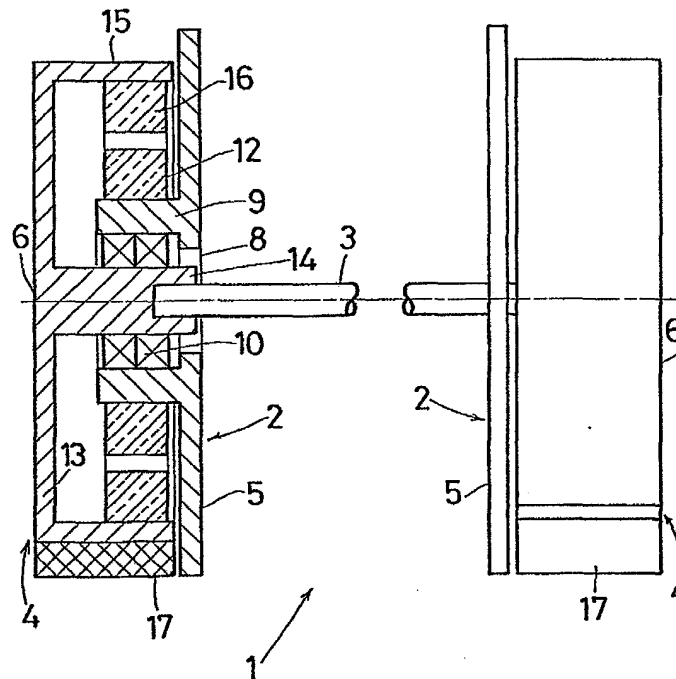
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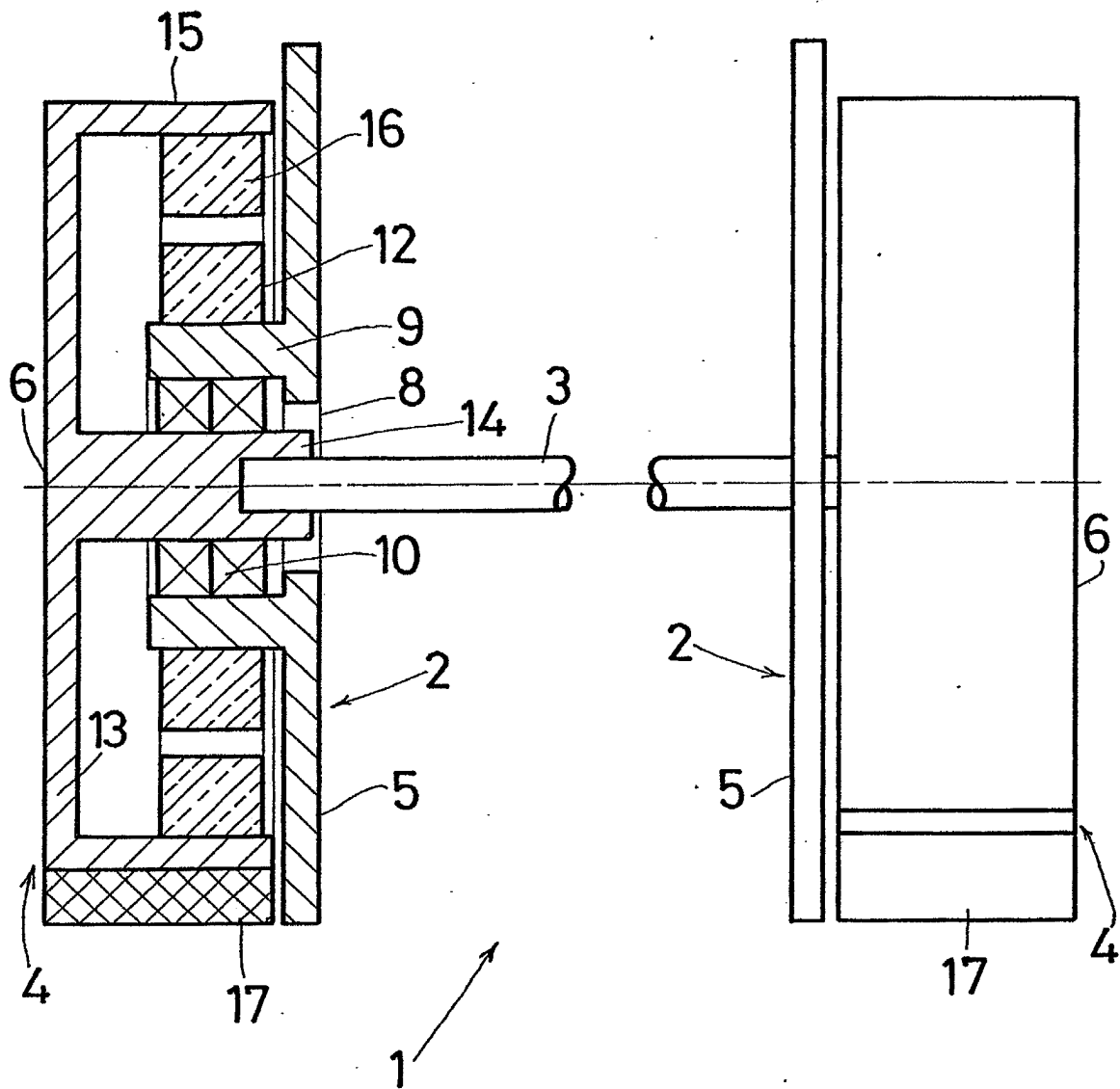
Selected US specifications from IPC sub-class H02K

(54) Electric motor vibrator

(57) An electric motor, for vibrating a piece of equipment such as screening apparatus, includes a circular base (5) and an out of balance rotatable member (4) rotatably mounted thereto. The base (5) includes a stator (12) and the rotatable member (4) a rotor (16) for the motor. Shaft 3, forming a synchronising tube may couple two such motor together. Alternatively the shaft may directly drive a second vibratory member.



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SPECIFICATION

Electric motor

5 This invention relates to an electric motor, and particularly to an electric motor for use in vibrating pieces of equipment.

It is well known to provide vibratory screens, for example, with an electric motor which rotates an off
10 balance weight and so imparts a vibration to the screen. The weight may be mounted directly onto the shaft of the motor or it may be mounted directly onto the shaft of the motor or it may be mounted on a separate shaft driven by the motor, for example by a
15 belt drive.

According to the invention an electric motor, for use in vibrating pieces of equipment, comprises a housing including a stationary member and a rotatable member rotatably mounted thereto, the stationary member including a stator within the housing,
20 and the rotatable member including a rotor within the housing, the mass of the rotatable member being off balance with respect to a common axis for the stator and rotor.

25 Preferably the stationary member forms a base for the housing and is substantially planar, and the rotatable member is a hollow internally cylindrical member.

The motor can include means for connecting the
30 rotatable member axially to the rotatable member of a similar motor.

The rotor can be a squirrel cage rotor.

Preferably the out of balance mass of the rotatable member is adjustable.

35 Also according to the invention an electric motor assembly comprises two motors in accordance with the invention having their rotatable members axially connected together.

The invention also provides a motor assembly as
40 set out above from which the rotor and stator of one of the motors are omitted.

An embodiment of the invention will now be described by way of example with reference to the drawing in which a motor assembly according to the invention is schematically shown in part cross section.
45 In this embodiment a vibrating electric motor assembly 1 for use in vibrating a vibratory screen is provided.

The motor assembly 1 comprises a pair of identical
50 electric motors 2 which are connected together for synchronisation purposes by means of a shaft in the form of an elongate axial tube 3.

Each motor 2 comprises a housing 4 having two parts: a stationary member forming a substantially
55 planar base 5 and a rotatable member 6.

The base 5 is in the form of a circular disc 7 having a central circular aperture 8 surrounded on one side thereof by a cylindrical support 9. The cylindrical support 9 forms a mounting for a bearing assembly
60 10. The disc includes suitable mounting apertures (not shown) for engagement by bolts or the like.

Co-axially mounted to the base 5 and on the outer surface 11 of the cylindrical support 9 is an annular stator 12 including suitable stator windings.

65 The rotatable member 6 comprises a shallow

hollow cylindrical member 13 having an inwardly directed inner cylindrical member 14 which co-operates with the bearing 10 thereby enabling the rotatable member 6 to rotate about the axis of the base 5 and aperture 8.

An outer cylindrical wall 15 serves to locate a squirrel cage type of rotor 16 which is positioned as is known in the art adjacent the stator 12.

Fixed to the outer surface of the cylindrical wall 15
75 of the rotatable member 6 is a weight 17 which places the rotatable member 6 out of balance with respect to its axis. Conveniently the weight 17 may simply be fixed into position by using suitable fixing screws passing therethrough and into threaded
80 bores in the cylindrical wall 15. Using this fixing method the weight 17 may easily be changed for one having a different mass.

The synchronising tube 3 extends into the aperture 8 in the base 5 and is fixed into a co-axial bore in the cylindrical member 14 by means of co-operating
85 screw threads.

The opposite end of the synchronising tube 3 is connected in exactly the same manner to the other motor 2 such that the weights 17 are synchronised.
90 Using this synchronising tube 3 the two motors 2 may be placed on opposite sides of the screen deck for the screen.

It will readily be appreciated that the motors above described dispense with a need for heavy transverse drive shafts extending across the screen deck as well as supporting cross beams which are necessary for vibrating mechanisms of types used today. Furthermore the relatively large diameter of the rotatable member of the motor provides for efficient starting
100 conditions for the motor.

As a modification of the above assembly it is envisaged that one of the motors could be replaced by a motor housing, that is simply the base and rotatable member which could then be driven by the
105 other motor via the synchronizing tube.

CLAIMS

1. An electric motor, for use in vibrating pieces of equipment, comprising a housing including a stationary member and a rotatable member rotatably mounted thereto, the stationary member including a stator within the housing, and the rotatable member including a rotor within the housing, the mass of the rotatable member being off balance with respect to a common axis for the stator and rotor.
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2. A motor as claimed in Claim 1, in which the stationary member forms a base for the housing and is substantially planar, and in which the rotatable member is a hollow internally cylindrical member.
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3. A motor as claimed in Claim 1 or Claim 2, in which the rotor is a squirrel cage rotor.

4. A motor as claimed in any preceding claim, in which the out of balance mass of the rotatable member is adjustable.
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5. A motor as claimed in any preceding claim, including means for connecting the rotatable member axially to the rotatable member of a similar motor.

6. A motor assembly comprising two motors as
130 claimed in any preceding claim, having their rotat-

able members axially connected together.

7. A motor assembly as claimed in Claim 6, from which the rotor and stator of one of the motors are omitted.

5 8. A piece of equipment including at least one motor as claimed in any one of Claims 1 to 5.

9. A piece of equipment as claimed in Claim 8, in the form of screening apparatus.

10 10. An electric motor substantially as herein described with reference to the drawing.

11. An electric motor assembly substantially as herein described with reference to the drawing.

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Croydon Printing Company (UK) Ltd, 4/87, D8991685.
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY,
from which copies may be obtained.